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Study of the oxidized and non- oxidized bitumen modified with additive «adgezolin» by using electron paramagnetic resonance

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Abstract

© 2018 Institute of Physics Publishing. All rights reserved. Cationic surfactant (adhesion additive) «Adgezolin» has been developed. It is shown that introduction of «Adgezolin» into the oxidized bitumen increases the relative amount of asphaltenes and monocyclearomatic hydrocarbons. By means of electron paramagnetic resonance (EPR) it is demonstrated that the introduction of additive «Adgezolin» increases the number of paramagnetic «free» carbon radicals (FR) in the oxidized bitumen and decreases that in the unoxidized species. In both types of bitumen shift from the Lorentzian to Gaussian EPR lineshape of FR is obtained that could be connected with as an increase of the samples homogeneity. It is supposed that while in the oxygenated bitumens introduction of additives leads to the disaggregation of asphaltene-resins compounds, in the unoxidized samples the balance is shifted towards formation of di-radicals.

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